INDEX TO VOL. XCI

Alphabetic Table of Contents by Authors

ACTON, A. B., Sex chromosome inversions in Chironomus, 57

ALEXANDER, ANNE J. and D. W. EWER, On the origin of mating behavior in spiders, 311

ALLEN, GORDON, Reflexive catalysis, a possible mechanism of molecular duplication in prebiological evolution, 65

BARDACH, J. E. and R. G. BJORKLUND, The temperature sensitivity of some American freshwater fishes, 233

BIRCH, L. C., The meanings of competition, 5

BRNCIC, DANKO and THEODOSIUS DOBZHANSKY, The southernmost Drosophilidae, 127

BROWN, FRANK A., JR., Biological chronometry, 129

BRUCE, VICTOR G. and COLIN PITTENDRIGH, Endogamous rhythms in insects and microorganisms, 179

CAVALCANTI, A. G. L., D. N. FALCÃO, and L. E. CASTRO, Sex ratio in *Drosophila prosaltans*—a character due to interaction between nuclear genes and cytoplasmic factors, 327

CHAI, C. K., Developmental homeostasis of body growth in mice, 49

CHU, E. H. Y., and NORMAN H. GILES, A study of primate chromosome complements, 273

CLARK, A. M., The relation of genome number to radiosensitivity in Habrobracon, 111

COE, E. H., JR., Anthocyanin synthesis in maize—a gene sequence construction, 381

CUSHING, JOHN E., and GEORGE L. DURALL, Isoagglutination in fish, 121

DUNN, L. C., Discussion of Professor Grüneberg's paper, 103

DOBZHANSKY, THEODOSIUS, Reply to Mr. Morrill, 269

FINGERMAN, MILTON, Lunar rhythmicity in marine organisms, 167

FLICKINGER, R. A., The relation between yolk utilization and differentiation in the frog embryo, 373

FOLK, G. EDGAR, JR., Twenty-four hour rhythms of mammals in a cold environment, 153

FRIEDMANN, HERBERT, JEROME KERN, and JAMES H. RUST, The domestic chick: a substitute for the honey-guide as a symbiont with cerolytic microorganisms, 321

GOLDSCHMIDT, R. B., Discussion of Professor Landauer's paper, 91

GILLHAM, NICHOLAS W., Genetic studies in Aedes. I. The distribution of polytene chromosomes in *Aedes aegypti*, 265

GRÜNEBERG, HANS, The developmental mechanisms of genes affecting the axial skeleton of the mouse, 95

HUBBS, CLARK, and A. REYNOLDS, Copulatory function of the pectoral fin of gambusiin fishes, 333

KING, R. C., The major inorganic constituents of adult *Drosophila melanogaster*, 319

KANEHISA, TAKEHARU, Tests of chemical substances and specific genes for their effects on tumor incidence in *Drosophila melanogaster*, 393

KLEIN, R. M., and R. D. BEARDSLEY, On the role of omega bacteriophage in the formation of crown-gall tumor cells, 330

KLOPFER, PETER H., An experiment on empathic learning in ducks, 61

KRAMER, G., J. G. PRATT, and URSULA V. ST. PAUL, Two direction experiments with homing pigeons and their bearing on the problem of goal orientation, 37

LANDAUER, WALTER, Phenocopies and genotype, with special reference to sporadically occurring developmental variants, 79

MARKS, G. E., Telocentric chromosomes, 223

MORRILL, THOMAS A., What is "environment"?, 269

NELSON, OLIVER E., JR., The feasibility of investigating genetic fine structure in higher plants, 331

PAPAZIAN, H. P., Modes of tetrad formation, 63

POLLAK, EDWARD, H. F. ROBINSON, and R. E. COMSTOCK, Interpopulation hybrids in open-pollinated varieties of maize, 387

SAEZ, FRANCISCO A., An extreme karyotype in an orthopteran insect, 259

SANDLER, L. and E. NOVITSKI, Meiotic drive as an evolutionary force, 105

SHAFFER, B. M., Aspects of aggregation in cellular slime moulds. I. Orientation and chemotaxis, 19

SIEGEL, R. W., and J. R. PREER, JR., Antigenic relationships among Feulgen-positive cytoplasmic particles in Paramecium, 253

STEBBINS, G. LEDYARD, Self-fertilization and population variability in the higher plants, 337

STEPHENS, GROVER C., Twenty-four hour cycles in marine organisms, 135

SZARSKI, HENRYK, The origin of the larva and metamorphosis in amphibia, 283

TAYLOR, J. HERBERT, The time and mode of duplication of chromosomes, 209

TING, Y. C., A. E. KEHR, and J. C. MILLER, A cytological study of the sweet potato plant, *Ipomoea Batatas* (L.) Lam. and its related species, 197

VOLPE, E. PETER, Embryonic temperature adaptations in highland *Rana pipiens*, 303

_____ Genetic aspects of anuran populations, 355

Subject Index

abnormalities, in mice, 95
acrasin, 25, 32
Acrididae, chromosomes, 259
Actinia equina, 168
adaptive characters, in amphibia, 358
Agrobacterium tumefaciens, 330
amphibia, origin of larva, 283
  population genetics, 355
American Naturalist, Report of the Secretary, 205
American Society of Naturalists Symposium
  "Biological Chronometry," 129
  "Population Genetics," 337, 355
Anas platyrhyncus, 62
anthocyanin synthesis in maize, 381
antigenic relationships in Paramecium, 233
antigens, in kappa particles, 253
atomic constitution of *Drosophila melanogaster*, 319

bacteriophage, 330, 331
balanced polymorphism, 107
bats, 154
biological chronometry, 129
  clocks, 180
  rhythms, 135
    classification of, 147
bioluminescence, 189
bloodgroups, in fish, 125
Bombyx mori, 84
Bromus species, pollination behavior, 339

Candida albicans, 321
Carassius auratus, 234
Cairina moschata, 62
catalysis, reflexive, 65, 66
cell division, 213
  and DNA, 209
centric fusion, 261
Cercopithecidae, 273
Cercopithecus aethiops tantalus, 279
Cercopithecus nictitans Buttikoteri, 279
channel catfish, 121
chemical evolution, 65, 70
  phenocopies, 93
chicken, as symbiont, 321
Chironomus, 57
  chromosomes of, 396
Chordata, 283
chromosomes, acrocentric, 231
  in *Aedes aegypti*, 265
  duplication of, 209, 213
  in orthopteran, 259
  in tissue culture, 273
  in monkey species, 275
  X-ray breakage, 214
  telocentric, 223
chromosomal aberrations, 116
chromosome complements in primates, 273
  numbers in Ipomoea, 197
chronometry, biological, symposium on, 900
clock system in organisms, 132, 135
cold, effect on rhythms in crabs, 138
  of behavior, 153
cold exposure and body temperature, 157
color change rhythms, 172
competition, 5
  interspecific, 11
congenital defects, 81
Convoluta rascoffensis, 167
corn, 106
copulation in gambusiin fishes, 333
crossing over, 214, 219
cycles, solar and lunar, 131
  in marine organisms, 135
cytoplasmic factors in Drosophila, 327

Dactylotum bicolor, 263
deoxyribonucleic acid, 29
DNA during meiosis, 211
  in chromosomes, 209
  in Lilium and Tradescantia, 211
  synthesis, 210
developmental variants, 79
Dichroplus silveira guidoi Lieb, 259
Dictyostelium discoideum, 23
differentiation, in frog embryo, 373
digestive system, in amphibian larvae, 286
Drosophila melanogaster, 106
  chemical composition of, 319
  obscura, 105
  persimilis, 270
  pseudoobscura, 105, 270
  prosaltans, sex ratio in, 327
Drosophila phenocopies, 91
Drosophila, rhythm in, 147
Drosophilidae in Tierra del Fuego, 127

empathic learning, in ducks, 61
environment, definition of, 269
Eptesicus fuscus, 155
Erythrocebus patas, 278
Erythrocebus patas, chromosomes in, 274
erythrocyte antigens, 122
evolution, of self-fertilization, 338
  meiotic drive in, 105
  prebiological, 65
excretion, in amphibian larvae, 287

Feulgen positive particles, 253
fertilization, in spiders, 311
  in protoarachnid, 313
fiddler crab, 135, 172
fish and amphibian larvae, comparison of, 283
fish, copulation in, 333
  isoagglutination in, 121
  temperature sensitivity in, 233
  temperature sense, 233
  thyroid, 293
fowl, phenocopies in, 79
frog, embryo differentiation in, 373
  color patterns in, 356

Gambusia affinis, 333
Gambusia heterochir Hubbs, 333
genes and development, 95
gene analog, 67, 73
  sequence of action, 381
genetic fine structure, 331
genome number, in Habrobracon, 111
Genyonemus lineatus Ayres, 124
goal orientation, in pigeons, 37
goldfish, behavior of, 243
ground squirrel, 154, 158

Habrobracon, radiosensitivity in, 111
Habrobracon juglandis, 111
hamster, 154
  activity rhythms in, 159
heart rate rhythm, 155
heterosis in maize, 387
hibernation, 160
  of bats, 164
homeostasis, developmental, 49
homing reactions, in pigeons, 37
honey-guide, 321
hormones in metamorphosis, 290
hybridization, interspecific, 364
  in *Rana pipiens*, 305
Hydrodictyon, 190
  rhythm in, 146

Ictalurus natalis, 235
  nebulosus Le Sueur, 121
  punctatus Le Sueur, 121
inbreeding in maize, 387
Indicator minor, 325
induction and yolk utilization, 376
insect chromosomes, 259
interspecific hybridization in Ipomoea, 200
inversions in Chironomus, 57
Ipomoea batatas, 197, 201
Ipomoea pescaprae, 201

Kappa particles, 253
Katsuwonus pelamis Linnaeus, 125

Lepomis gibbosus, 235
lunar rhythms, of breeding, 169
  of color change, 172
  of oxygen consumption, 171

Macaca mulatta, chromosomes in, 274
maize, anthocyanin synthesis in, 381
  interpopulation hybrids in, 387
mammals, rhythms in, 153
marine organisms, 167
meiosis, in sweet potato, 198
meiotic drive, 105
melanophore dispersion, in crabs, 136
Mendelian population, 14
Metamorphosis in amphibia, 283
  in fishes and amphibians, 289
mice, body growth in, 49
Micrococcus cerolyticus, 321
microorganisms, rhythms in, 188
mimicry, 61
monkeys, 273
mosquito chromosomes, 265
mouse, 106
  development of, 95, 103
  polydactyly in, 86
Mytilus edulis, 148, 169

natural selection, 13, 65
nervous system, in amphibian larvae, 285
Neurospora sitophila, 64

ontogeny and phylogeny, 283
Oparin, A. I., on origin of life, 65
orientation, of birds, 130
Ostrea edulis, 169
oxygen consumption, rhythms in, 171

Papio papio, 275
Paramecium aurelia, 253, 329
Paramecium bursaria, 189
parthenogenesis, in the silkworm, 84
Periplaneta, rhythm in, 146
periodic phenomena, in biology, 145
phenocopies, 79, 87, 92, 101
phenodeviants, 86
photoperiodism, 130
phototaxis, 168
pigeons, homing, 37
Pilobolus, 190
polypeptides, 74
polymorphism, in anurans, 355
  in Chironomus, 396
polyploidy, as evolutionary mechanism, 280
Polysphondylium violaceum, 25
polyteny, 266
polytene chromosomes, 265
population genetics in amphibia, 355
population size and rhythm, 143
population structure in amphibia, 360
population variability with self-fertilization, 337
protoplasm, beginnings of, 74

radiosensitivity in Habrobracon, 111
radiation, cycles of, 132
Rana pipiens, induction in, 377
Rana pipiens, temperature adaptations, 303
reflexive catalysis, 77
reproductive cycles, 130
rhythms, in insects, 179, 181
  in marine organisms, 167
  melanophore, 136
  in microorganisms, 179, 186
  of muscular activity, 159
  of oxygen consumption, 144
ribose nucleic acid, 210
rumplessness, in fowls, 79

Salmo gairdneri, 235
Salvelinus fontinalis, 234
self-duplication, 67
self-fertilization, origin of, 342
  and variability, 337
self-incompatibility, 341
Semotilus atromaculatus, 235
sex ratio in Drosophila, 105
skeleton, in amphibian larvae, 284
skeletal variations, in mice, 95
sleep, rhythms in, 154
slime moulds, aggregation, 20
  chemotaxis in, 19
  orientation in, 19
speciation in self-fertilizing plants, 347
species specificity, 28
spermatophore transference, in spiders, 314
spermatogenesis, 259

spiders, mating behavior in, 311
stabilizing selection, 53
starch, in pollen, 331
sweet potato chromosomes, 197
  origin of, 201
symbiosis, 321

temperature, adaptations in amphibia, 303
  rhythms, 156
  perception, 249
  sensitivity in fish, 233
tidal rhythm, 144, 167
thymidine, as label for DNA, 215
Tierra del Fuego, Drosophilidae in, 127
tissue culture, 273, 277
tryptophane, 393
Tulbaghia violacea, 212
tunicata, 283
tumors, in *Drosophila melanogaster*, 343
  crown-gall

Uca pugilator, 143
Uca pugnax, 143

variability and self-fertilization, 337
Vicia faba, 210
Watson and Crick, chromosome duplication, 216
wax digestion, 321
waxy maize, 331

x-rays, effects on Habrobracon, 112

yolk utilization in embryos, 374

4092